

# **About Those Electronic Book Readers**

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National Capital Technology and Computer User's  
Group, Inc.

# Outline

- The market for e-books
- Publishing and e-books
- Sources of information on e-books
- E-book competition 2007-2010
- Alternative electronic delivery to e-books
- E-book readers
  - Amazon Kindles
  - Barnes & Noble Nook
  - Sony Readers
  - Apple iPad
- General observations

# The Market for E-Books<sup>1</sup>

- Sales: 2008 – 1 million; 2009 – 5 million; 2013 – 20 million
- Amazon Kindle + Sony Reader account for 75% of the market
- Sales of iPad 3 million (April 3 to June 19; see Apple at  ) ← Click on the "i" to link to the Web
- 90% use e-ink display technology (B&W) 
- 8% of consumer book sales is digital<sup>2</sup>

<sup>1</sup> *Chemical & Engineering News*, July 12, 2010, p. 19.

<sup>2</sup> *Time*, August 2, 2010, p. 59.

# Publishing and E-Books

- The major stakeholders in e-book readers
  - Publishers
    - ✓ trade
    - ✓ STM
    - ✓ textbooks
    - ✓ university
    - ✓ vanity
  - Authors
  - Book stores and other providers
  - Equipment manufacturers
  - Customers: individuals, corporations & libraries

# Publishing and E-Books (cont.)

- Economics of publishing
  - Publishers' fixed costs
  - First copy costs
  - PP&D (paper, printing and distribution)
  - Marketing
- Publishers and authors must make money to participate
- Consumers pay directly or indirectly
- E-books primarily in trade publishing

# From Whence Comes Material for E-Books?

- Word processors (authors)
- Composition systems
  - editing
  - page make-up
  - imposition
  - printing plates
- Databases
- Output to appropriate digital formats (PDF, HTML, AZW (Kindle), PDB (B&N Nook), LRX & LRF (Sony), JPEG, GIF, etc.

# E-Book File Formats

From Wikipedia, see [i](#)

\ Format Reader \	Plain text	PDF	ePub	HTML	Mobi-Pocket	Fiction-Book	DjVu	Broadband eBook <sup>1</sup>	eReader <sup>1</sup>	Kindle <sup>1</sup>	WOLF <sup>1</sup>	Tome Raider <sup>1</sup>	Open eBook <sup>2</sup>
Amazon Kindle 2, DX	Yes	Yes	No	No	Yes	No	No	No	No	Yes	No	No	No
Apple iPad	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No
Azbooka WISEreader	Yes	No	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No
Barnes & Noble Nook	No	Yes	Yes	No	No	No	No	No	Yes	No	No	No	No
Bookeen Cybook Gen3, Opus	Yes	Yes	Yes <sup>3</sup>	Yes	Yes <sup>3</sup>	Yes <sup>4</sup>	No	No	No	No	No	No	Yes
COOL-ER Classic	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No
Hanlin e-Reader V3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
Hanvon WISEreader	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No
iRex iLiad	Yes	Yes	Yes	No	Yes	No	Yes	No	No	No	No	No	No
Iriver Story	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No
Nokia N900	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	Yes
NUUTbook 2	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No	No
OLPC XO, Sugar	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No	No	No	No
Onyx Boox 60	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Pocketbook 301 Plus, 302, 360°	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Sony Reader	Yes	Yes	Yes	No	No	No	No	Yes	No	No	No	No	No
Viewsonic VEB612	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No

<sup>1</sup> Proprietary format - <sup>2</sup> Predecessor of ePUB - <sup>3</sup> Versions support either ePUB or MobiPocket - <sup>4</sup> Only ePUB version and with FW 2.0+

# Characteristics of E-Book File Formats

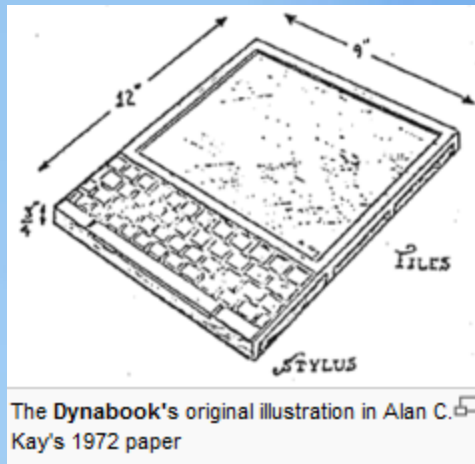
Format	Filename extension	DRM support	Image support	Word wrap support	Open standard	Embedded annotation support	Book-marking
Plain text	.txt	No	No	Yes	Yes	No	No
HTML	.html	No	Yes	Yes	Yes	No	No
PostScript	.ps	No	Yes	No	Yes	?	?
Portable Document Format	.pdf	Yes	Yes	No	Yes	Yes	Yes
DjVu	.djvu	?	Yes	No	Yes	?	?
EPUB (IDPF)	.epub	Yes	Yes	Yes	Yes	No	No
FictionBook	.fb2	Yes	Yes	Yes	Yes	Yes	?
Mobipocket	.prc, .mobi	Yes	Yes	Yes	Yes	Yes	Yes
Kindle	.azw	Yes	Yes	Yes	No	Yes	Yes
eReader	.pdb	Yes	Yes	Yes	No	Yes	Yes
Broadband eBook	.lrf, .lrx	Yes	Yes	Yes	No	?	?
WOLF	.wol	Yes	Yes	No	No	?	?
Tome Raider	.tr2, .tr3	Yes	Yes	Yes	No	?	?
ArghosReader	.aeh	Yes	Yes	Yes	No	?	Yes
Microsoft Reader	.lit	Yes	Yes	Yes	No	?	Yes

From Wikipedia see 



# E-Book Development

- Project Gutenberg 1971 [i](#)
- Dynabook – Alan Kay 1968, see [i](#)



- Dynabook 1970's\*

\* From PARC (**P**alo **A**lto **R**esearch **C**enter); formerly Xerox PARC

# Competition in 2007










- Amazon Kindle (Nov 2007\*)
- Sony Reader (Oct 2006)
- Seiko e-ink E-Book Reader
- Bookeen Cybook V3
- LG Philips Flexible eBook
- Fujitsu eBook (demo)

\*Amazon started to sell physical books on the Internet in 1995.










# Competition in 2009

- Amazon Kindle
- Sony PRS-700 Reader
- Foxit eSlick Reader
- Irex Digital Reader 1000S
- Plastic Logic Reader (partners only)






# Competition in 2010

1. Amazon Kindle 
2. Barnes & Noble Nook  (Oct 2009)
3. Sony Readers 
4. Apple iPads 
5. Plastic Logic Que (two models) 
6. Interead Cool-RD 
7. ECTACP jetBook 
8. IREX Digital Readers 
9. Samsung Papyrus 

## Competition in 2010 (cont.)





10. Bebook 
11. RCA REB 1100 
12. Foxit eSlick 
13. Onyx Boox 60 
14. Asus DR-900 
15. Bookeen Cybook OPUS 
16. Astak 6 EZ Reader 
17. Iliad 
18. Fujitsu FLEPia 

# Competition in 2010 (cont.)

- 19. enTourage eDGe\* 
- 20. HP Slate  (rumors of cancellation)
- 21. Toshiba Libretto W100 
- 22. BeBook Neo 
- 23. Ectaco jetBook-Lite 

\* See *Businessweek*, May 24-30, 2010, p. 76

# Alternatives to E-Book Readers

1. Project Gutenberg (1971) 
  - 30,000 free books
  - For PC, iPhone, Kindle, Sony Reader, etc.
2. Google Books 
  - Controversial—conflicts with publishers & governments
  - 10 million books—1 million in public domain
  - Provides links to purchase books
3. Disney Digital Books 
  - ~500 books
  - \$79.95/yr or \$8.95/mo
4. For additional information on e-books see Wikipedia... 

# Other Electronic Delivery

## 1. STM journals

- American Chemical Society 
- American Institute of Physics 
- Elsevier Science Direct 
- IEEE CS Digital Library 
- *J. Am. Med. Assoc.* 

## 2. Magazines





- *Time* 
- *The Economist* 

## 3. Newspaper Web sites

- *New York Times* 
- *Washington Post* 



## Other Electronic Delivery (cont.)

4. Textbooks 
  - Thousands available
  - Priced somewhat lower than print books
  - Adoption slow by publishers and students
5. Library of Congress Digital Collections 
6. National Library of Medicine (PubMed) 
7. California Digital Library 

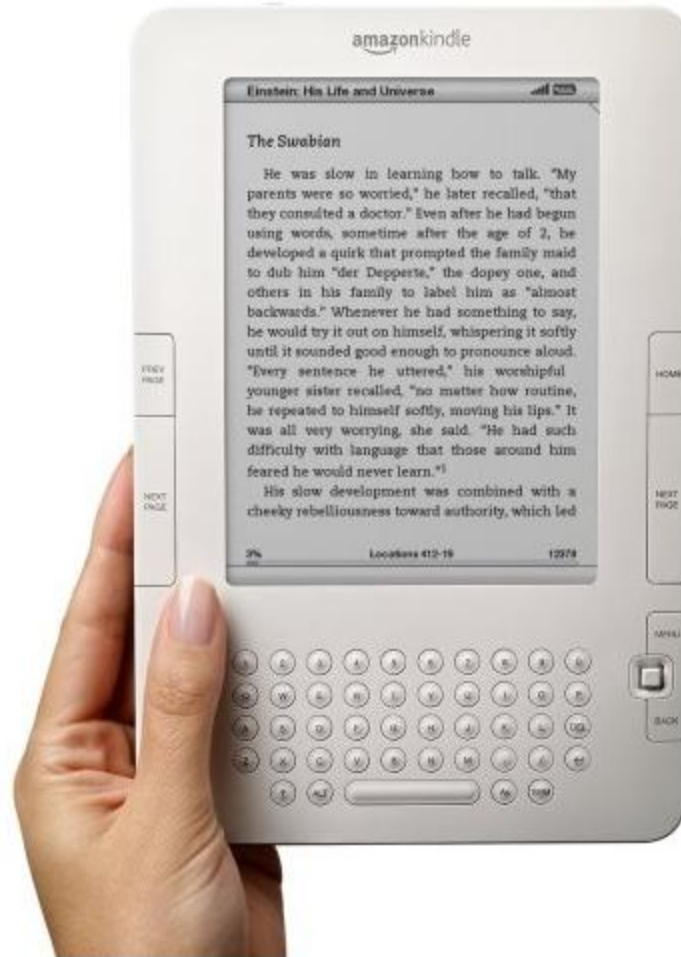
# Digital Rights Management (DRM)

- Access control and use technologies, see [i](#)
- ePub format (includes DRM, see [i](#)) supported by major e-book devices
- Amazon Kindle uses proprietary AZW format (DRM)
- Apple iPad expected to use FairPlay (DRM) and/or Adobe Content Server, see [i](#)
- PDF can be “encapsulated” with DRM (for example, FileOpen, see [i](#))

# Principal Competitors in 2010

- Amazon Kindles
- Barnes & Noble Nook
- Sony Readers
- Apple iPads

# Amazon Kindle 2



# Amazon Kindle DX



# Amazon Kindles

Kindle



Kindle DX



Display	6" diagonal E Ink®	9.7" diagonal E Ink®
Size	8" x 5.3" x 0.36"	10.4" x 7.2" x 0.38"
Storage	1,500 books	3,500 books
Books in Under 60 Seconds	✓	✓
Free 3G Wireless	Global	Global
Native PDF Support	✓	✓
Text-to-Speech	✓	✓
Whispersync	✓	✓
Rotating Display	Manual Rotation	Auto-Rotation
Price	<b>\$189.00</b>	<b>\$379.00</b>

Prices as of July 25, 2010

# Amazon Kindles (cont.)




- E-Ink display technology (BW only)
- Linux kernel, v. 2.6.10
- Keyboard
- Variable font sizes
- Weight: 10.2 and 18.9 oz
- Resolution:
  - 600 x 800 pixels at 167 ppi; 16 level gray scale
  - 1200 x 824 pixels at 150 ppi; 16 level gray scale

## **Amazon Kindles (cont.)**

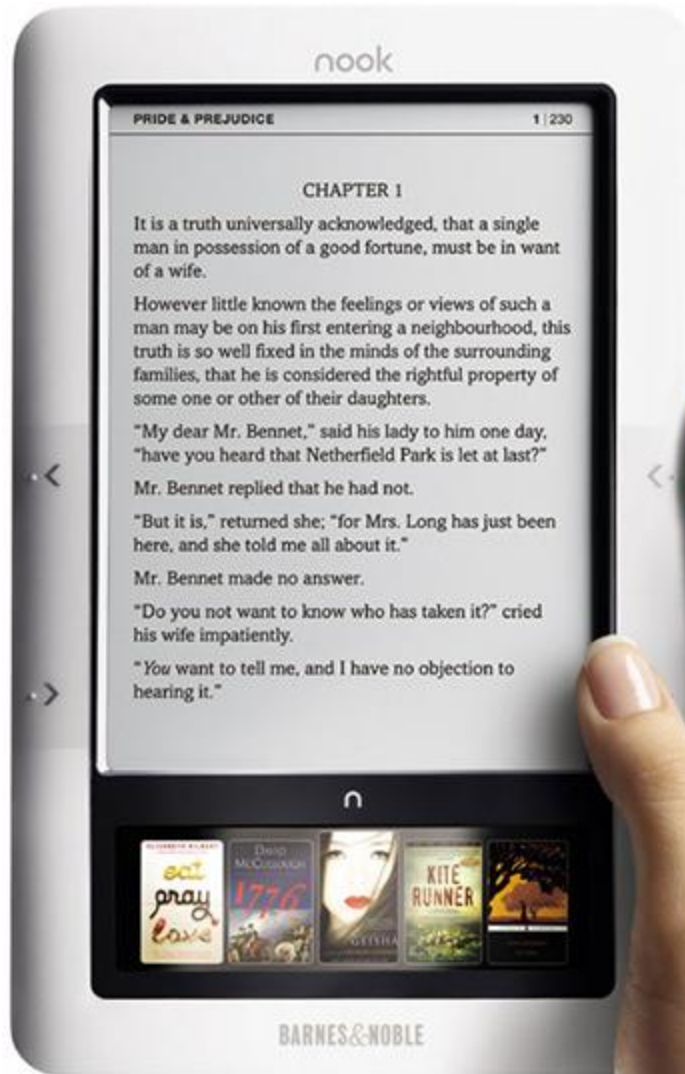
- International 3G wireless
- 620,000 titles (as of July 25, 2010)
- Purchase books in U.S. and ~ 100 countries
- No book sharing; 6 readers on same account
- Books can be downloaded multiple times



## Amazon Kindles (cont.)

- Most books \$10 (Macmillan \$15 )
- Free sample chapters
- 1.8 million free out-of-copyright titles 
- Free Kindle software available for PC, iPhone, BlackBerry & Macintosh
- For more information... 

# Barnes & Noble Nook



\$199 WiFi & 3G Nook

\$149 WiFi Nook

(July 27, 2010)



# Barnes & Noble Nook

- E-Ink display technology (BW only)
- Color touchscreen or virtual keyboard
- Google Android OS
- Variable font sizes
- Weight: 12.1 oz
- Size: 8" x 4.9 x 0.5"
- Store 1,500 books
- File Formats: EPUB (DRM), PDB, PDF, JPG, MP3, others
- Resolution: 600 x 800 pixels at 200? ppi; 16 level gray scale

## **Barnes & Noble Nook (cont.)**

- 3G wireless (U.S.)
- Purchase books in U.S. only
- >1,000,000 titles (growing?)
- Some e-books can be loaned to friends (14 days)
- Able to read entire e-books for free at local Barnes & Noble stores
- Books can be downloaded multiple times

## Barnes & Noble Nook (cont.)

- Most books seem to be priced at \$10
- Sample any e-book free
- Many free out-of-copyright titles available
- Free Nook software available for PC, iPhone, Macintosh, iPad, Android & Blackberry
- For more information see... 
- For comparison of Nook and Kindle 2 see... 

# Sony Readers



## READER Touch Edition™

A library of books at your fingertips.

~~\$249.99~~ **\$169.99**



## READER Daily Edition™

Download your books and periodicals wirelessly.

~~\$349.99~~ **\$249.99**



## READER Pocket Edition™

Hundreds of books wherever you go.

~~\$169.99~~ **\$149.99**


Eat, Pray, Love Bundle now available.

Prices as of July 25, 2010

# Sony Readers

- E-Ink display technology (BW only)
- Touchscreen (not Pocket Edition)
- MontaVista Linux
- 3-6 font sizes
- Weight: 7.8, 10.1 and 12.3 oz
- Size: 6 to 8" x 4 to 5" x 0.4 to 0.6"
- Book storage: 350 to 1000+ (?)
- Resolution: 166 or 299 ppi; 8 or 16 level gray scale (depending on model)

## Sony Readers (cont.)

- 3G wireless (U.S. & Canada only)
- 1,000,000 titles (including Google Books)
- No book sharing; 5 readers on same account
- Access to public libraries for checkout and downloading books 



## Sony Readers (cont.)

- Most books seem to be priced at about \$10
- Many free titles available
- Free Reader software available for PC, Mac and Blackberry
- To purchase Sony's e-books, see [i](#)
- For more information from Sony, see [i](#)

# Apple iPad



E-book reader or netbook or laptop or...?

## Select your iPad.

### Wi-Fi

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**16GB<sup>1</sup>**

Ships: Delivers on  
April 3rd

Free Shipping

**\$499.00**

Pre-order

**32GB<sup>1</sup>**

Ships: Delivers on  
April 3rd

Free Shipping

**\$599.00**

Pre-order

**64GB<sup>1</sup>**

Ships: Delivers on  
April 3rd

Free Shipping

**\$699.00**

Pre-order

### Wi-Fi + 3G (3G data plan sold separately.)

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**16GB<sup>1</sup>**

Ships: Late April

Free Shipping

**\$629.00**

Pre-order

**32GB<sup>1</sup>**

Ships: Late April

Free Shipping

**\$729.00**

Pre-order

**64GB<sup>1</sup>**

Ships: Late April

Free Shipping

**\$829.00**

Pre-order

Wi-Fi models April 3, 2010

Wi-Fi + 3G models April 30, 2010

# Apple iPad Characteristics

- LED – backlit glossy; BW and color
- Based on iPhone OS, which is based on OS X
- Touchscreen & virtual keyboard
- Variable font sizes, full-screen zoom
- Weight: 1.5 to 1.6 lbs
- Size: 9.56" x 7.47" x 0.5"
- Resolution: 768x 1024pixels at 132 ppi; 16 level gray scale
- Communication: Wi-Fi and 3G cellular (+ \$130 + \$29.99/month)

# Apple iPad (cont.)

- Features:
  - E-book reader
  - Music (iTunes)
  - E-mail
  - Surf the Web (Safari)
  - Calendar, Contacts & Notes
  - iWork (word-processor, spread sheet, presentations)
  - Video (including movies)
  - Photos
  - Maps & GPS (WiFi models – WiFi positioning; 3G models – true GPS)

# Apple iPad (cont.)

- Applications:
  - Runs (most) of 150,000 apps for iPhone & iPod Touch (i.e., iTouch)
  - 5,000 to 10,000 new productivity apps by end 2010
- Publishers: Penguin Harper Collins, Macmillan, Hachete Book Group & Simon & Schuster
- Free iBooks app available for iPad
- Amazon e-books available for the iPad

# Apple iPad (cont.)

- For more information, see:
  - Apple [i](#)
  - Gizmodo [i](#)
  - Review from *PC World* [i](#)
  - Review from *The Baltimore Sun* [i](#)
  - Article from *The New York Times* [i](#)
  - Apple's Vision of the Future, *Time*, February 8, 2010, pp. 34-35.
  - Best & Worst Computers, *Consumer Reports*, June 2010, pp. 30-37.



# Apple iPad (cont.)



- Reviews are mixed: See *SmartComputing*, April 2010, p. 40. *BusinessWeek*, April 12, 2010, pp. 18-20.
- Projected sales expected 3-6 million units (\$2-3 billion revenue; 300,000 sold first day!; sales of 3 million reached by June 19<sup>th</sup>)



# Apple iPad (cont.)

- “The iPad is selling so briskly that it’s already bringing in more revenue than the still-growing iPod business” *Bloomberg Businessweek*, July 26 – August 1, 2010, p. 34
- “iPad sales made up 6.5% of all netbook/slate sales in the first quarter of this year. In the first two months of the second quarter that number has jumped to 30% of the market share.” *SmartComputing* (Daily Information), July 24, 2010.

# Some More Recent Technologies

- enTourage eDGe reader
- Mirasol display technology
- Microsoft cancels iPad competitor called Courier (April 30, 2010); see  



# enTourage eDGe™

The World's First Dualbook™



\$539 (July 25, 2010)

# enTourage eDGe

- E-book reader and Netbook combination
- E-book reader
  - 9.7" e-reader screen (e-ink)
  - ePub and PDF files
- Netbook
  - Google Android OS
  - Color 10.1" screen
  - Virtual keyboard
  - E-mail, contacts list, calculator, etc.
- For more information, see [i](#)
- Reviews? See [i](#) and [i](#) – mostly negative

# Mirasol Display Technology

initial e-reader sized demo showing actual color and video refresh rate on a mirasol® display.



Announcing a new  
**FUTURE**  
for e-reader displays

Beautiful color, fast-paced video, visibility in direct sunlight and longer battery lives – on their own, each is an attractive quality for mobile devices. But brought together, it is unlike anything available today – an exciting marriage that promises rich, multi-media experiences for users.

[▶ Discover the benefits of mirasol® displays](#)

# Mirasol Display Technology

- From Qualcomm MEMS Technologies, Inc.
- Based on IMOD (**I**nterferometric **MOD**ulation) reflective technology. (Think butterflies)
- Low power consumption
- Highly reflective (usable in direct sunlight)
- For a video demonstration (with sound) see [i](#)
- How does it work? See [i](#)
- Deconstructed Qualcomm's Bright Low-Power Screen, *Bloomberg Businessweek*, May 3-9, 2010, p. 36.

# E-Readers: Negatives

- Lack file compatibility
- DRM restrictions
- Readers are relatively expensive \$200-\$1000
- Lack color display (except iPad & Fujitsu FLEPia)
- Resolution inadequate for many (most) graphics. Little or no graphic manipulation
- Only top-down, linear reading/browsing
- Unsuitable for many technical publications
- Relatively fast obsolescence (2-3 years)
- 2-4 readers will dominate within several years



# E-Readers: Positives

- Relatively inexpensive books (average ~\$10, many free)
- Purchase of e-books easy and rapid
- 100's of thousands of books available (millions?)
- Portable – take a library with you
- Excellent readability
- Very good battery capacity
- Reasonable search function
- Ready access to dictionary



# Factors in Selecting an E-Book Reader

- Meeting your expectations
- Availability of your kind of books
- Stability of the reader's manufacturer
- Price of reader and books
- Functionality of the reader
  - Display (readability and size)
  - Weight
  - Ergonomics
  - Storage capacity
  - Search functions
- Characteristics of the DRM used

# A Final Thought...

**180**

Number digital books sold for every 100 hardcover books on Amazon.com (according to Amazon)\*

\* *Bloomberg Businessweek*, July 26 – August 1, 2010, p. 37.